

Remarks

Claims 18-21 were pending in the subject application. By this Amendment, claims 18-19 have been amended and claims 22-25 have been added. The undersigned avers that no new matter is introduced by this amendment. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 18-25 are currently before the Examiner for consideration. Favorable consideration of the pending claims is respectfully requested.

The applicants gratefully acknowledge the Examiner's indication in the Advisory action dated November 1, 2002 that the applicants' response overcame the rejection of claims 18-21 under 35 U.S.C. §112, second paragraph, as indefinite. On December 12, 2002, the applicants filed a Petition for Revival (which was granted on December 24, 2002) and a Continued Prosecution Application Request with a request for limited suspension of action under 37 CFR 1.103(b).

Claims 18-21 were rejected under 35 U.S.C. §103(a) as being obvious over Heide (*Physiol. Plant*, 1977, 40:21-26) in view of Darrow ("The Strawberry", 1996, Holt *et al.*, pp. 355-365). The applicants respectfully traverse these grounds for rejection because the cited references, alone or in combination, do not disclose or suggest the claimed invention. However, by this Amendment, the applicants have amended claim 18 to recite that the daytime temperature is abruptly reduced during a second growing period to about 25°C. Support for this amendment can be found, for example, at page 2, lines 20-21, page 3, lines 27-29, page 4, lines 1-2, and the claims as originally filed.

The Office Action dated March 12, 2002 indicates that the primary reference (Heide) describes a method of inducing flowering in strawberry plants by reducing temperature and photoperiod. Furthermore, the Advisory Action dated November 1, 2002 indicates that because the Heide publication describes inducing flowering by abruptly lowering temperature of cool climate varieties, "it would have been obvious to do the same with a warm climate variety, starting with a warmer temperature." However, as indicated in the Declaration by Dr. Craig Chandler under 37 C.F.R. §1.132, which was previously submitted with the Amendment dated September 12, 2002, it must be appreciated that "the effect of reducing the daytime temperature for a particular plant (or sample of plants) from one growing period to the next growing period was not evaluated" in the Heide publication. The applicants respectfully submit that there is nothing within the Heide

publication to suggest that strawberry plants can be induced to flower by abruptly reducing the daytime temperature in a subsequent growing period as recited in the claims.

The subject invention is directed to a method for controlling flower induction in strawberry plants in a controlled-temperature environment by growing the strawberry plants for a first growing period of at least six weeks at a daytime temperature reaching at least 30°, and abruptly reducing the daytime temperature during a second growing period, after the first growing period, to about 25°C, as recited in claim 18 of the subject application.

Submitted herewith is a Declaration by Dr. Daniel J. Cantliffe under 37 C.F.R. §1.132, for the Examiner's consideration. As explained by Dr. Cantliffe in his Declaration,

Heide conducted several experiments interacting four photoperiods (10, 12, 14, and 16 hours of light) and three temperatures (12°C, 18°C, and 24°C) on plants that were previously grown in a soil mix in a greenhouse under continuous light for 24°C for about three weeks. Heide indicates that three-week old plants were subjected to five-week treatments at the various temperature and day lengths as previously indicated. In these experiments, the treatment temperatures, 12°C, 18°C, and 24°C, were constant day/night temperatures. Heide did not alternate temperature during any of these experiments. The results of Heide's experiments were certainly not surprising, as they simply showed that short photoperiods (10 or 12 hours) led to flowering in the cultivars used, and that if the temperatures were a constant 12° or 18°C for five weeks, Heide was able to induce a larger amount of flowers on the plants at 10-hour or 12-hour photoperiods compared to those plants grown at a constant 24°C, as evident in Figures 1 and 2 at page 22 of the Heide publication.

Claim 18 of the subject application recites that flowering is induced by abruptly reducing the daytime temperature after a period of growing the plants at high temperature, *i.e.*, at least 30°C for periods of at least 6 weeks. Specifically, the daytime temperature is abruptly reduced to about 25°C. As Dr. Cantliffe explains in his Declaration, in contrast to the claimed method,

...in Heide's work, temperatures for floral induction were best when maintained at constant temperatures of 12°-18°C under short photoperiods, *i.e.* constant 12 hours or less...[U]sing the method of our invention, by growing plants for an extended period (at least 6 weeks) under high temperature and then abruptly lowering the temperature to about 25°C, we induce flowering regardless of photoperiod. Furthermore, as stated in our patent application, this happens regardless of nighttime temperature.

The secondary reference (the Darrow publication) does not cure the defects of the primary reference. As explained by Dr. Cantliffe in his Declaration, the Darrow publication merely teaches that long photoperiods and cool nights are considered favorable for flowering in strawberry cultivars that are field grown. The Heide and Darrow publications, when considered alone or taken together, do not teach or suggest the invention as claimed.

By this Amendment, claims 22-25 have been added. Support for claims 22-25 can be found, for example, at page 3, lines 19-20, and page 4, lines 3-4, of the subject specification. As recited in claims 23-25, the nighttime temperature may be maintained at 30 degrees or higher, or the nighttime temperature may also be reduced. The subject invention exploits the fact that, in order to induce flowering in strawberry plants, neither photoperiod nor nighttime temperature are critical—only the abrupt change of temperature from at least 30°C to a temperature of about 25°C. As indicated by Dr. Cantliffe in his Declaration, “the experiments conducted by Heide at constant day/night temperatures do not teach or suggest this fact, or our invention.” The applicants respectfully submit that the cited references, when considered alone or taken together, do not teach or suggest the claimed invention.

The applicants respectfully submit that there is no suggestion or motivation in the prior art references that would lead a person skilled in the art to arrive at the subject invention. As a matter of law, a finding of obviousness is proper only when the prior art contains a suggestion or teaching of the claimed invention. The mere fact that the purported prior art could have been modified or applied in a manner to yield the applicants' invention would not have made the modification or application obvious unless the prior art references suggested the desirability of the modification. *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Moreover, as expressed by the CAFC, to support a §103 rejection, “[b]oth the suggestion and the expectation of success must be founded in the prior art” *In re Dow Chemical Co.*, *supra* at 1531. As shown by the foregoing remarks, neither the Heide nor the Darrow references provides the suggestion nor the expectation of success in subjecting strawberry plants to either daytime or nighttime temperatures of at least 30°C for a period of at least six weeks.

An assertion of obviousness without the required suggestion or expectation of success in the prior art is tantamount to using applicants' disclosure to reconstruct the prior art references to arrive

at the subject invention. This was specifically recognized by the CCPA in *In re Spinnoble*, 56 CCPA 823, 160 USPQ 237, 243 (1969):

The Court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is we must review the prior art without reading into that art appellant's teachings. *In re Murray*, 46 CCPA 905, 268 F.2d 226, 112 USPQ 364 (1959); *In re Sprock*, 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360 (1962). The issue, then, is whether the teachings of the prior art would, in and of themselves and without the benefits of appellant's disclosure, make the invention as a whole, obvious. *In re Leonor*, 55 CCPA 1198, 395 F.2d 801, 158 USPQ 20 (1968). (Emphasis in original)

Here, it is only the applicants' disclosure that provides the teaching to expose strawberry plants to daytime temperatures of at least 30°C for at least six weeks and to then abruptly reduce the daytime temperatures to about 25°C, and the applicants' disclosure cannot be used to reconstruct the prior art references for a rejection under §103.


In view of the foregoing remarks and amendments to the claims, reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing remarks and amendments to the claims, the applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

The applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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Attachment: Marked-Up Version of Amended Claims
Declaration under 37 CFR §1.132 by Dr. Daniel J. Cantliffe

Marked-Up Version of Amended Claims**Claim 18 (twice amended):**

A method for inducing flowering of strawberry plants wherein said strawberry plants are grown in a controlled-temperature environment[;], wherein said method comprises growing said strawberry plants for a first growing period of at least six weeks at a daytime temperature which reaches at least 30° C, and wherein said daytime temperature is abruptly reduced during a second growing period, after said first growing period, [to less than 20° C] to about 25° C.

Claim 19 (amended):

The method, according to claim 18, wherein said method further comprises reducing the photoperiod to which said plants are exposed during said second growing period compared to said first growing period.